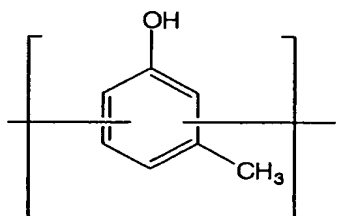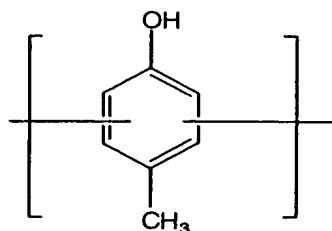WHAT IS CLAIMED IS:

1. A phenol novolak resin:

having a peak intensity ratio of ortho-ortho bond (o-o)/ortho-para bond (o-p)/para-para bond (p-p) not substantially varying in each molecular weight fraction, said peak intensity ratio being detected in a resin structure by ^{13}C-NMR analysis; and

having a weight average molecular weight (Mw) of 3000 to 20000 in terms of polystyrene.
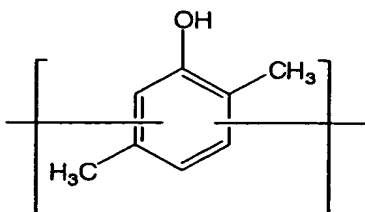
2. A phenol novolak resin according to claim 1, comprising at least two selected from phenol constitutional units represented by the following formulae (I) to (IV): ·
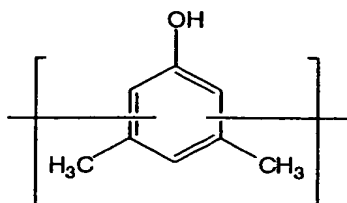

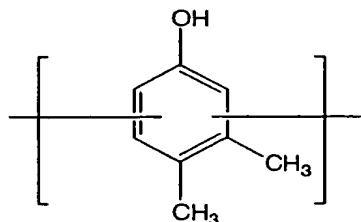(I)   (II)

(III)   (IV)

3. A phenol novolak resin:

having a peak intensity ratio of ortho-ortho bond (o-o)/ortho-para bond (o-p)/para-para bond (p-p) in a range of 3.0-5.0/2.0-3.5/1, said peak intensity ratio being detected in a resin structure by ^{13}C-NMR analysis and not substantially varying in each molecular weight fraction;

comprising phenol constitutional units represented by the formulae (I) and (III) as defined in claim 1 and the following formula (V); and

having a weight average molecular weight (Mw) of 3000 to 20000 in terms of polystyrene.
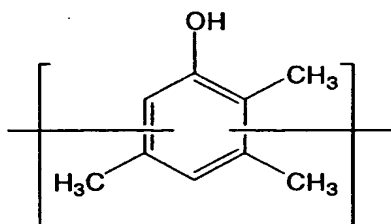

(V)

4. A phenol novolak resin:

having a peak intensity ratio of ortho-ortho bond (o-o)/ortho-para bond (o-p)/para-para bond (p-p) in a range of 5.0-8.5/2.5-4.5/1, said peak intensity ratio being detected in a resin structure by ^{13}C-NMR analysis;

comprising phenol constitutional units represented by the formulae (I) and (II) as defined in claim 1 and the

following formula (VI); and

having a weight average molecular weight (Mw) of 3000 to 20000 in terms of polystyrene.

(VI)

5. A phenol novolak resin according to any one of claims 1 to 3, wherein a ratio of the peak intensities of para-para bond (p-p) to the total of the peak intensities of ortho-ortho bond, ortho-para bond, and para-para bond [(o-o)+(o-p)+(p-p)] is in a range of 10% to 20%.

6. A phenol novolak resin according to claim 4, wherein a ratio of the peak intensities of para-para bond (p-p) to the total of the peak intensities of ortho-ortho bond, ortho-para bond, and para-para bond [(o-o)+(o-p)+(p-p)] is in a range of 5% to 15%.

7. A phenol novolak resin according to any one of claims 1 to 6, wherein a resin film formed by the use of the phenol novolak resin dissolves in a 2.38% by weight aqueous

tetramethylammonium hydroxide solution at 25°C at a rate of 0.01 to 0.001 μm/s.

8. A process for producing a phenol novolak resin, comprising the steps of:

(a) subjecting a phenol to a polycondensation reaction in the presence of an acid catalyst;

(b) removing water from a reaction system;

(c) decomposing, in the presence of an acid catalyst, the polycondensation product obtained in the step (a); and

(d) subjecting the resulting product to a polycondensation reaction with an aldehyde or a ketone.

9. A positive photoresist composition comprising a phenol novolak resin according to any one of claims 1 to 7, and a 1,2-naphthoquinonediazide-group-containing compound.